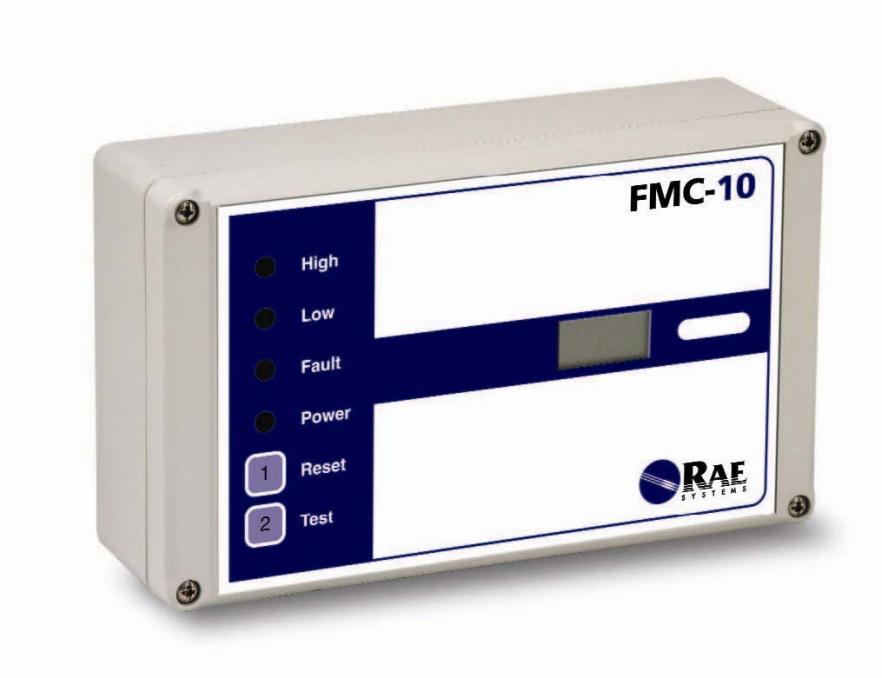
FMC-10 Controller
Wiring And Alignment Guide



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FMC-10 Wiring And Alignment Guide

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Important!

Consult the FMC-10 User's Guide for operational information. This guide is not intended as an operational guide. It is intended only for installation and alignment. If you do not have a copy of the FMC-10 User's Guide, it is available in PDF form from the RAE Systems website at www.raesystems.com.

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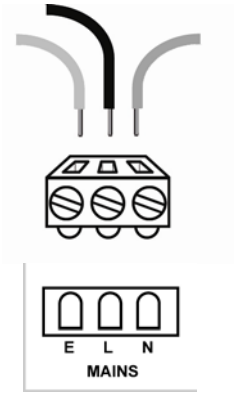
1. Wire The FMC-10 For AC Power

Connect power wires from an AC source to the 3-pole power block. Slip the stripped end of each wire into the receptacle on the block and tighten its screw. Connect as follows:

Label:	**E**	**L**	**N**
Meaning:	Earth	Live	Neutral
AC wires:	Ground	Hot	Neutral



Wiring block

FMC-10 circuit board

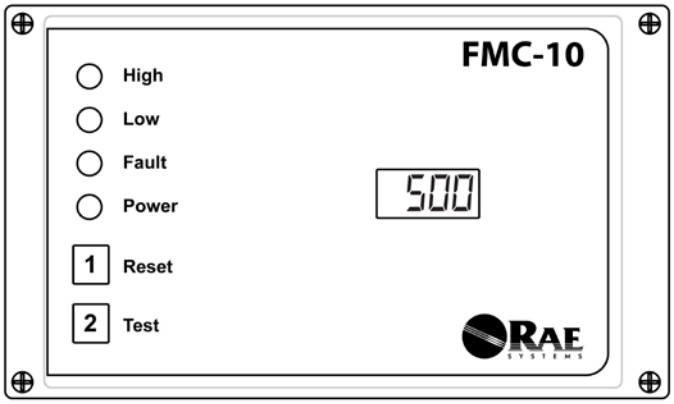
Note: Refer to the FMC-10 user's manual for other configurations.

Important! Before applying power to the controller, connect all sensor heads to the selected channel.

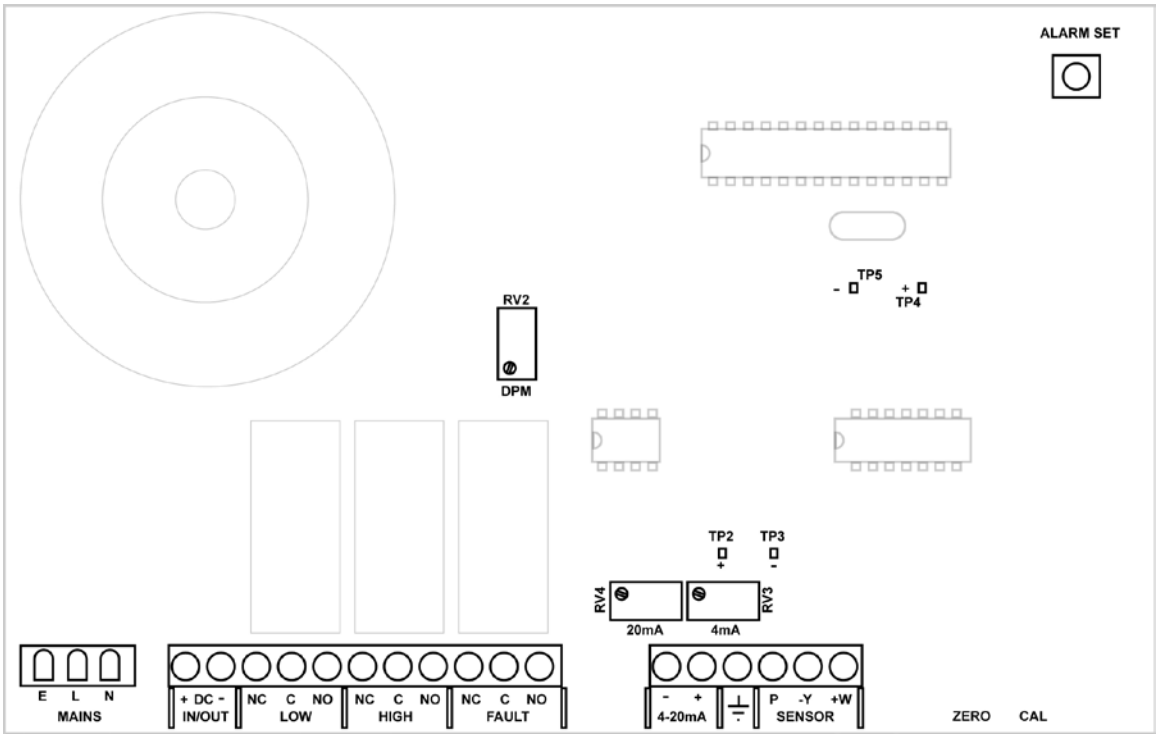
Once the block is wired for AC power, plug the block into its mating receptacle on the PC board.

2. Wire the FMC-10 To The RAEGuard Or Other Sensor Head

Open the FMC-10 by removing the four Philips screws.



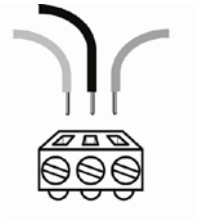
The printed circuit board with all connection points is now visible.



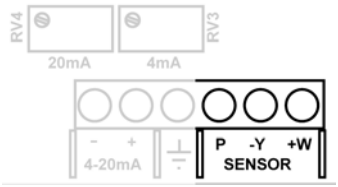
Note: The two potentiometers labeled Zero and Cal are accessed through two holes in the bottom of the FMC-10 enclosure. All other potentiometers and test points are located on the printed circuit board.

Connect three wires from the sensor head to the points labeled P Y W in the following way (note that if you are using a RAEGuard, you can follow the color scheme):

FMC-10 Label	Sensor Wire	RAEGuard Wire
W	Positive (+) supply	Red
Y	4-20mA signal output	Blue
P	Negative (-) supply	Black



Wiring block



FMC-10 circuit board

3. Alignment Procedure

Note: You should calibrate the RAEGuard sensor before performing the alignment procedure for the FMC-10.

With all wiring completed, begin the alignment procedure.

You will need the following tools:

- Plastic alignment tool (recommended) or fine flathead screwdriver such as a jeweler's screwdriver
- DVM (digital voltmeter)

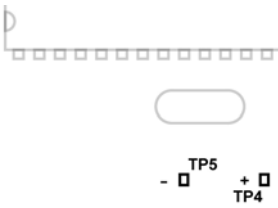
The FMC-10 should be open with the PC board fully exposed.

3.1. Set Digital Display Full-Range

Important! Before applying power to the controller, connect all sensor heads to the selected channel.

1. Apply power to the FMC-10.
2. Use an alignment tool to adjust the Zero potentiometer (located on the bottom of the FMC-10) so that the FMC-10's display reads 000 (or 20.9 for oxygen sensors).

3. Turn on the DVM.
4. Connect the "+" (red) probe from the DVM to the test point on the PC board labeled TP4.
5. Connect the "-" (black) probe from the DVM to the test point labeled TP5.



Test points TP4 (+) and TP5 (-)

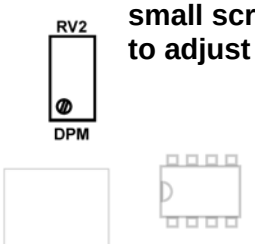
6. While monitoring the display on the DVM, use the alignment tool to turn the recessed screw labeled Zero on the outside of the FMC-10 until the DVM reading is 0.5 volts.

Note: Turning clockwise increases the value, while turning counterclockwise decreases it.

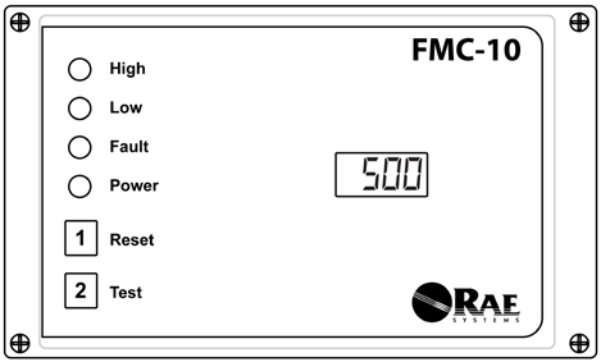
3.2. Set Full-Scale Maximum Value

Now set the full-scale maximum value to match your sensor head's detection range.

1. Use the screwdriver to turn the screw on the board-mounted potentiometer (RV2) labeled "DPM" while watching the display on the front of the FMC-10.



Use alignment tool or small screwdriver to adjust



2. Adjust it until the value shown in the FMC-10's display reads the same as the full-scale output of the sensor head (for example, 1000, 500, 20, etc.).

3. Disconnect the DVM's probes from the test points.

Note: Turning clockwise increases the value, while turning counterclockwise decreases it.

4. Set High/Low Alarm Thresholds

1. Adjust the sensor to put out 4mA.

2. Press and hold the FMC-10 Alarm set button on the circuit board until the alarm beeps and the Low alarm LED on the FMC-10's front panel glows.

3. When you hear the beep (and the Low LED glows), release the switch.

Note: Establish low and high alarm thresholds you want from the sensor head (such as 20, 500, etc.).

4.1. Low Set

1. Adjust the Zero potentiometer until the FMC-10's display shows the low alarm value (such as 200).

2. Press the Alarm Set button once, and the high alarm LED should glow.

4.2. High Set

Adjust the Zero potentiometer until the FMC-10's display shows the high alarm value (such as 500).

4.3. Normalize Settings

1. Press the Alarm set button. Both the High and Low LEDs should glow.

2. Adjust the Zero potentiometer to show 000 in the FMC-10 display.

Note: If you are using an oxygen detector, set the value to 20.9.
For toxics and PID sensors, the reading should be 000.

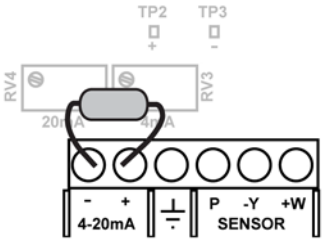
3. Press the Alarm set button again, and alarm LEDs should turn off.

Alignment is complete.

Important! Make sure to test the system with calibration gas before monitoring.

5. Adjust The 4-20mA Range-Scale

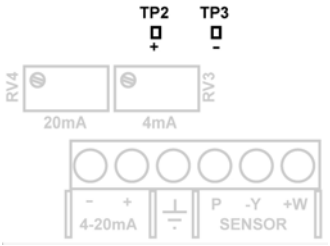
1. Connect a 100- to 250-ohm resistor to the 4-20mA output points.



2. Set the sensor head to output 4mA.
3. Locate the Zero potentiometer on the bottom of the FMC-10's case. Adjust the Zero potentiometer until the FMC-10's display reads "000."

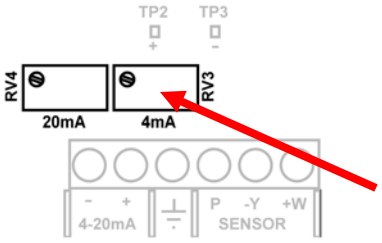
   Note: Turning clockwise increases the value, while turning counterclockwise decreases it.

4. Connect the "+" (red) probe from the DVM to the test point on the PC board labeled TP2.
5. Connect the "-" (black) probe from the DVM to the test point labeled TP3.



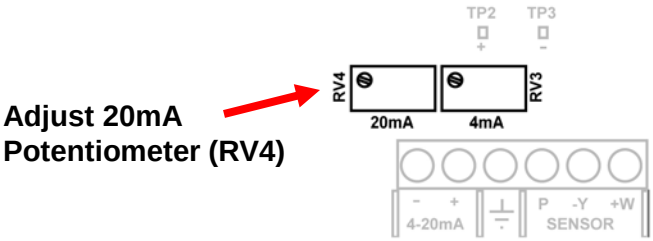
Test points TP2 (+) and TP3 (-)

6. Turn the screw on the PC-board-mounted pot labeled "4mA" (RV3) and monitor the DVM. When it reads 4mV (or 0.004 volts), it is set correctly.



Adjust 4mA Potentiometer (RV3)

7. Set the sensor output to deliver 20mA. Make sure the DVM shows 20mV. If it does not show 20mV, adjust the potentiometer labeled “20mA” (RV4) until the DVM displays 20mV.



8. Turn the recessed Cal Span potentiometer on the bottom of the FMC-10’s case until the FMC-10 display reads a value matching the sensor’s full-scale value (such as 1000 or 20, etc.).

9. Disconnect the DVM’s probes from the test points, and remove the resistor from the 4-20mA output points.

Alignment is complete.

Important! Make sure to test the system with calibration gas before monitoring.

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